

1 What is claimed is:

2 *Sub A 2* 4. A process for measuring and recording the thickness of an automotive trim panel

3 material comprising the steps of:

4 contacting a first surface of the material at a first position with an inductive sensor;

5 contacting a second and opposite surface of the material with a metallic object and

6 generating a first output signal;

7 converting the first output signal of the sensor into a value that represents the

8 thickness of the material at said first position;

9 contacting said first surface of the material at a second position with said inductive
10 sensor;

11 contacting a second opposite surface of the material at said second position with a
12 metallic object and generating a second signal;

13 converting the second output signal of the sensor into a value that represents the
14 thickness of the material at said second position; and

15 generating a cross-sectional thickness profile in said material as between said first
16 and second positions.

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18 2. The process of claim 1 wherein the sensor is a linear analog sensor.

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20 3. The process of claim 1 including the step of communicating said cross-sectional

21 thickness profile in said material to a controller which is in communication with a

22 cutting assembly to cut said material to a desired thickness, wherein said controller

1 adjusts the thickness of a cut into said material based upon said cross-sectional profile
2 thickness in said material to provide a cut of desired thickness.

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4 4. The process of claim 3 wherein said cutting assembly comprises laser scoring.

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6 5. The process of claim 3, wherein said sensor is attached to a robotic arm and the
7 sensor is moved from the first position to the second position by said robotic arm.

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9 6. The process of claim 3, wherein the sensor is mounted on a flexible mechanism
10 to promote contact between the sensor and the material.

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12 7. The process of claim 1, wherein the automotive trim panel is an instrument
13 panel.

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15 8. The process of claim 3, wherein the automotive trim panel material forms an air
16 bag opening upon deployment of an air bag and said cut of said trim panel material
17 weakens said material for air bag deployment.

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19 9. The process of claim 1 including the step of communicating said cross-sectional
20 thickness profile in said material to a controller which is in communication with a
21 molding operation for said automotive trim panel material which controller instructs
22 said molding operation to adjust molding conditions to thereby adjust thickness of the

1 material exiting the mold based upon said cross-sectional thickness profile in said
2 material to provide a material of substantially uniform thickness.

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4 10. The process of claim 3 wherein said controller is additionally in communication
5 with a molding operation for said automotive trim panel material wherein said controller
6 instructs said molding operation to adjust molding conditions to adjust thickness of the
7 material exiting the mold based upon said cross-sectional thickness profile in said
8 material to provide a material of substantially uniform thickness.

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10 11. The process of claim 10 wherein said adjustment of molding conditions to adjust
11 thickness comprises adjusting the amount of material provided in the mold.

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13 12. A process for measuring and recording the thickness of an automotive trim
14 panel material comprising the steps of:

15 contacting a first surface of the material at a plurality of positions with an inductive
16 sensor,

17 contacting a second and opposite surface of the material at a corresponding plurality
18 of positions with a metallic object to generate a plurality of output signals,

19 converting said output signals into a value that represents the thickness of the
20 material at said plurality of positions;

21 generating a cross-sectional thickness profile in said material as between said
22 plurality of positions; and

1 communicating said cross-sectional thickness profile in said material to a controller
2 which is in communication with a cutting assembly to cut said material to a desired
3 thickness, wherein said controller adjusts the thickness of a cut into said material based
4 upon said cross-sectional profile thickness in said material to provide a cut of desired
5 thickness.

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7 13. The process of claim 12 wherein the automotive trim panel provides an air bag
8 opening and said cut of said trim panel material weakens said material for air bag
9 deployment.

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